

Navigation



Introduction

By navigation is understood any act or procedure that will *ensure* the safety of passengers and crew, vessel and cargo during a voyage from a point of *departure* to a *destination*.

This safety is greatly *determined* by good seamanship.

And since good seamanship refers to The Human Factor (HF), it is obvious that the influence on safety on board vessels is largely determined by acts of the seafarers on board.

Therefore the manning of a vessel must be planned very accurately, and because most vessels are manned with multi-lingual crews, special attention should be paid to the internationally standardized form of maritime communication, both intership and intra-ship.

Manning

All vessels have one thing in common: they must be manned by qualified crews.

On board vessels the two main departments are the deck department and the engine room department.

The radio department is often *integrated* in the deck department.

The head of the deck department is the first mate - or Chief Officer.

The Chief Engineer is the head of the engine room department.

Officers are assisted by *ordinary seamen* and *able (bodied) seamen* (OS and ABS).

An "able seaman" is an *experienced* seafarer. He or she will often act as *man-at-the-wheel (helmsman)*, or lookout.

The *boatswain*, or bosun, is the head of the *ratings* (OS and ABS).

Apprentice officers are officers in training.

Nowadays many vessels are manned with *General Purpose Officers* - or Multi- Purpose Officers - who have been trained to perform the duties of the mate, engineer and radio operator together.

Duties

Of course the main responsibility of all the deck officers on merchant vessels is navigation, i.e. getting the vessel safely to her destination.

There are many other duties to be performed in the deck department.

The first mate is responsible for making up the *stowage plan*, supervision of loading and discharging of the cargo and general ship maintenance.

The second mate is responsible for the navigational equipment.

The third mate will often act as safety-officer. He or she is responsible for the maintenance of all the safety equipment on board.

The main duties of the Engineering-officers in the engine-room department are the *maintenance* and *overhauling* of the main engine and the *auxiliary-engines*.

The captain, or *master*, is ultimately responsible for all that goes on aboard the vessel.

Usually he has not been integrated in the watch-keeping system on the bridge. If he thinks it necessary to appear on the bridge and *interfere* with the work of the officer of the watch (**OOW**), or if the master is called to the bridge by the OOW, he must clearly indicate that he will become the *conning officer* by saying: "I now have the watch". To confirm this, the OOW will then answer: "You now have the watch".

The tasks of the radio operator are to contact *shore based stations* and other vessels in cases of *distress*, to transmit *urgency* messages, safety messages when there are *imminent* dangers to navigation, to listen to Notices to Mariners, weather reports and navigational warnings and to maintain contact with other ships for a safe and efficient voyage.

Watchkeeping

The 24-hour-period on board the vessel is divided into 6 shifts, or watches, as they are called. Each watch lasts 4 hours.

The watches are:

First watch (2000 hrs-2400 hrs)

Middle watch (0000 hrs - 0400 hrs)

Morning watch (0400 hrs-0800 hrs)

Forenoon watch (0800 hrs - 1200 hrs)

Afternoon watch (1200 hrs - 1600 hrs)

Evening watch (1600 hrs - 2000 hrs).

The evening watch is often divided into two watches of 2 hours each to allow everyone to enjoy the evening meal. These two watches are called the first- and second *dogwatch*.

The Radio-operator keeps watch four periods of two hours a day.

One of the **watchkeeping-systems** that is used in the deck department aboard sea-going vessels is the "4-12-8" system, whereby the first mate stands all four-o'clock watches, the second mate stands the twelve-o'clock watches and the third mate stands the eight-o'clock watches. The captain will often join the third mate, since the third mate is usually the least experienced officer.

Heading, course, track and drift

By **heading** is understood the *direction* in which the vessel is pointing. It is the angle between the *fore-and-aft line* of the vessel and *True North*, *expressed in degrees*.

Heading constantly changes *due to sea and wind influences and steering errors*.

By **course** is understood the intended sailing direction of the vessel. In other words:

it is the direction in which the vessel is steered in order to reach her destination (B).

It is expressed in degrees.

A **track** consists of one, or a number of course lines along which the navigator intends to proceed for a safe passage, e.g. when *clearing a danger*.

A **great circle course** will form the shortest connection between two places on the earth.

A **Rhumb Line**, or loxodrome, will form a line whereby all the angles made by the course line and the meridians are equal. This implies that in (Mercator) sea charts the earth is not a sphere, but a square.

Composite sailing combines the advantages of the great circle and the rhumb line: it will offer the shortest route, while the vessel can keep constant true directions.

Due to the influences of wind and current the vessel's destination will not be reached without any *alterations of course*.

By **course made good** is understood the course that the ship will follow after allowing for the effects caused by wind. Now the effect of current on the vessel's path must also be corrected, resulting in a **course over ground** that will lead to her destination.

